**2019 Online KT Conference:**

**Innovative KT Strategies That Work**

*Cutting-Edge KT: Adaptations and Sustainability*

Julia Moore

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>> DONNA MITRANI: Our first presentation today is from Dr. Julia Moore, the senior Director for the Center for Implementation. She has a Ph.D. from Penn State where she was trained as an implementation scientist, researching the best ways to implement evidencebased programs. Dr. Moore is passionate about supporting professionals in how to use implementation science. She has delivered dozens of workshops to more than 1500 participants and her free online minicourse enrolled more than 1,000 people in one month. Her presentation today is CuttingEdge KT, Adaptations and Sustainability. If you have questions during the presentation, please ask them in the chat box and we'll address them as we can. Using questions from the chat box, I will moderate a Q and A following Dr. Moore's presentation. Julia, are you ready to begin?

>> JULIA MOORE: Yes, I am. Hi, everybody. I'm so excited to be here today to start off the Conference. I wanted to share a quick few things about me. I'll talk about my crossborder experiences. I am originally from Canada. I went to University of Alberta and did my Ph.D. at Penn State. I have experience on both the Canadian side and American side and have now returned back to Canada. I'll talk a bit about that, particularly when thinking about some of the components related to adaptations.

Today I'll talk about adaptations and sustainability, two very cutting‑edge topics in Knowledge Translation. Before I dive deep into those, I want to cover a few really basic elements high‑level very quickly to make sure we're kind of on the same page in thinking about some of these components.

A first thing we know, we have a major naming challenge in the field. We call it Knowledge Translation, implementation science, knowledge mobilization, research to practice. So we know that the key core piece of this is that we ultimately have a major gap between what we know and what we're doing. In fact, people say it takes 17 years for research evidence to be used in practice. We know we can do better.

That intro, it was all about the fact that we can do better than this and how can we narrow that gap by getting research evidence out there in the hands of people so that they use it. I'm going to talk about a specific aspect related to Knowledge Translation, kind of meaning on key components.

We really see Knowledge Translation as an umbrella term encompassing a huge range of activities. It includes both dissemination and implementation. So, dissemination is thinking about how we share information ideally in a bye directional way, back and forth, to increase people's awareness and knowledge of something. The act of doing that, it is dissemination practice. Ideally dissemination practice is guided by a science of dissemination. While we know that this is a major, major activity that's very common, we also know that dissemination alone only produces a pretty small change in outcomes, about 1 to 2%. That's why we often start shifting down this spectrum towards implementation which is where we use strategies to change people and organization and system behavior to actually get the outcomes we're looking for. The act of doing this, it is implementation practice. Ideally that's guided by implementation science, the study of how best to implement. I'm going to focus today on how we can use implementation science to guide our implementation practice related to two specific areas, adaptations and sustainability.

Essentially, we are looking to be more strategic rather than relying on chance as we move forward with implementation, especially the adaptation component of implementation, often is very reactive rather than strategic and proactive.

So, the core thing we need in order to do this, it is to understand the foundations of what makes implementation science able to help us in our implement takings efforts. That has to do with using process models, theories and frameworks. This is really the foundation of how we can apply implementation science in practice. Process models outline steps and stages to put evidence in practice. They're these models that give us a series of steps or stages often an iterative steps or stages that put that research evidence into practice.

Theories help us to understand and predict causal mechanisms. So, what is it that makes a person change their behavior? Frameworks help explain factors that influence different things. We are going to refer to some frameworks today in thinking about adaptations and sustainability.

In order to be able to think about adaptations especially, we need to understand what it is that we're implementing. So, some people get to move forward and implement what we would call an evidence‑based program. A pre‑packaged program that's already tested and ready to go and to be implemented that has all of the materials and components already built into it.

The reality is, there are small numbers of evidence‑based programs compared to what is often happening, which is people have something they want people to do differently, what we would define as the what, and we don't actually know how we're going to change people's behavior so that they'll do that thing.

Ideally, our what, the thing we want people to do differently, it should be based in evidence. There is a great paper by Brown and Colleagues that talked about what could include seven different P’s they called it, so things like programs, practices, procedures, processes, pills, policies, products. And so, the seven Ps describe things we want, people, organizations, systems to do differently. Just because we want to do them differently doesn't mean they're going to do it differently. Otherwise, dissemination would be more effective at changing people's behavior. Since they're not necessarily going to do what we want them to do automatically we need strategies to actually change people's behavior, and that's where the how comes in. The strategies describe how you can change people's behavior. Ideally, those should be based on evidence as well.

Not only should we have evidence that the strategies are effective, but they need to be linked together using theory.

I think the best example of this, that I use all the time, it is an example, it is so easy to understand, it is the idea of getting a flu vaccine for healthcare workers. So, there is lots and lots of evidence to show that all healthcare workers should get a flu vaccine. That's the what, the thing we want people to do differently.

People often pick strategies like reminders as a way for people to change their behavior. Reminders are in fact an effective strategy for changing behavior. Reminders are only going to work effectively if they tap into the underlying reasons that people do or don't change their behavior. Since people don't really have memory as one of the primary barriers to getting a flu shot, reminders are not likely to be very effective in this case because some of the key barriers people have are things like time, access to the flu shot, then beliefs about flu shots that really drive whether or not people want to and are able to get the flu shot. That's a great example of why we want to pick our strategies to change people's behavior, not only based on the evidence but also the underlying behavior change theory.

There is a huge list of implementation strategies out there. In fact, you can go to what they call the Eric list by Byer and Colleagues that lists 73 different types of implementation strategies that you can use. We want to be really thoughtful on how we pick those.

I wanted to share kind of this whole concept upfront because as I go through talking about adaptation, it is important to think about these different components of what makes up the thing that you are implementing when you think about what it is that you are adapting.

That's the first piece that's really, really about what do we know about implementation and what we're implementing and how do we use that to guide adaptations.

Now we can start thinking about adaptations and the broader concept of implementation quality. Implementation quality is talking about whether an intervention that includes both the what and the how is implemented the way it was intended. Essentially, we need this in order to create the outcomes that we want.

This is an equation from the national implementation research network or NIRN, a great way to capture in a few bubbles all of the different pieces we need to think about when implementing. The idea behind this equation is that in order to create the outcomes we want, we need to have an evidence‑based practice, that's your what, you need implementation strategies that are based in evidence and theory, the how, and we need to implement those with high quality, we need to implement them the way they were intended, and we need a context ‑‑ a context that enables implementation. Today we're going to focus on implementation quality and how important that is in getting to those signature outcomes. While I'm only going to focus on implementation quality, I want to note that that is not the only thing that's important. In fact, when they developed this, they put multiplication signs because if any single one of these is 0, you are not going to reach the outcomes you were looking for. I'll focus on the green bubble, but we really need to think about all of them as we move forward with implementation.

So why is it important to measure implementation quality? Research has shown us that measuring implementation quality, just the active measuring it actually leads to better implementation quality, and better implementation quality leads to better outcomes. As well we know that measuring implementation quality helps us unpack the black box of what really happened. We know that many, many implementation efforts don't go as we had hoped. By understanding whether or not something was implemented as intended, we can get a better idea of whether an intervention worked or didn't work because the intervention itself did or didn't work, or whether it was an issue that it wasn't implemented with enough quality to produce the outcomes we were looking for.

Also, measuring implementation quality can be a great way to show current funders or potentially future funders what was actually done. I worked on projects where people used implementation quality data to show that they were implementing an intervention with really high quality and managed to successfully get additional funding to sustain their intervention just because they were able to show that they had implemented it very well.

When we talk about implementation quality, what do we really mean by implement takings quality? Implementation quality is made up by multiple different components. In this paper, Durlak and Dupre, they talk about eight components, two are talking about a controlled, comparison in research trials. I won't focus on those two. I will talk about these six components, and I noticed that in some of the chat box people are asking about the difference between implementation quality and fidelity. I'll get right into that right now.

The idea of implementation quality is that was this implemented as intended, and that's made up of these six different components, dosage, reach, quality of delivery, participant responsiveness, fidelity and adaptations. I'll go through and describe each of these, and we're then going to actually do a little activity together, and then from there, I'll go even deeper into talking about fidelity and adaptations.

The first one that we can think about, when we think about implementation quality, it is dosage. Essentially how much of the innovation or intervention was delivered? If you had, for example, training sessions, how many training sessions were delivered and how many people attended those training sessions? The dosage is going to look very different based on what your implementation strategies really are, whatever you intend to implement is truly going to guide what the dosage measures would look like. It is essentially asking are people getting what you wanted them to be getting.

Next, we have reach. Reach is asking whether the innovation is reaching the target audience. So, you can be asking how many people you're reaching, and whether those people are really the people you should be targeting or intended to target. For example, we see situations all the time where people are trying to implement an intervention, they're having struggles recruiting people to that intervention and so then they end up in a situation where they end up recruiting people who probably aren't a great fit for the intervention, but they're just trying to fill seats. So that is an issue of reach.

Next, we have quality of delivery. Quality of delivery has to do with the effective quality with which someone is implementing something or delivering something. This is honestly the one that people struggle with the most in my experience when talking about implementation quality. Effective quality, or this quality of delivery is really that feeling you get when you are listening to someone or watching someone and feel as though that person is really engaging for example. If I think back to when I was in undergrad, grad school I can think of people who were very disengaging presenters. In fact, my first psychology professor in my first year of undergrad, so boring, I dropped out of the second half of psychology and took Cal includes because I thought psychology was so boring, I was subsequently went on and spent a massive amount of time on behavior change theory and psychology topics, essentially that person was delivering lectures in such a way that it was so boring, I could not get engaged. So that quality of delivery is kind of how well someone is able to present the information. Very, very closely related to this idea of quality of delivery is participant responsiveness.

This is kind of the flip side of that, which has to do with how engaged are people in whatever it is that they're attending. Often these two things are related.

When the delivery ‑‑ this could show attendance, are people showing up for what the implementation strategies are?

Next, we have fidelity. Fidelity is the aspect of implementation quality that we think about and talk about most often. It is very important, but I do want to note that it is only one of the aspects of implementation quality and so I think it is really important to also think about some of those lines I just described.

The idea of fidelity is essentially looking at whether the implementer is closely adhering to what it was they were supposed to do. I, for example, am an absolutely horrendous Cook. It would not be surprising that I would have cookies that would end up looking like this. I pretty much have very poor implement takings quality when I am cooking. I don't follow recipes; I don't follow them closely. When things don't turn out at the end, it is not surprising, because I did not have fidelity to what it was that I was doing.

We see this all the time when we're implementing interventions. We can ask the question of were people following closely what it was that they were supposed to be doing. The concept of fidelity is often tied very, very closely with the idea of adaptations.

The idea of adaptations is that we make changes when we're actually delivering something.

So, for example, people may add components, delete components, modify components, all are adaptations to whatever it is that we're implementing. I'll talk in a moment about fidelity and adaptations in much more detail. Before I do that, I want to jump into a little activity where you will have an opportunity to think about some different examples, and whether you think it is an example of dosage, reach, quality delivery, participant responsiveness or fidelity/adaptation. I have actually combined fidelity and adaptation, sometimes I think it is hard to disentangle those when we think about them.

In this activity, what we're going to have you do, it is we're going to have you type in the chat box your answers to each of the questions. We're probably going to be a really fast typing situation; I have 7 examples we'll go through. Literally, you write one word, dosage, reach, quality of deliver, participant responsiveness or fidelity/adaptation. We'll go through all 7 of them.

Presentations were translated into Spanish and available in braille. Is this an example of dosage, reach, quality of delivery, participant responsiveness or fidelity/adaptation? It is interesting to see people's responses. I see a lot of people typing in reach. I want to add that's not typically the first one people include here. If you have ideas of another one, people are welcome to type another one in.

We have a lot of people saying reach, some people talking about qualities of delivery and then we had some people talking about adaptations. This is in fact a great example of what people talk about as an adaptation. It is a good, good adaptation to do this. Sometimes we have these negative connotations related to the adaptation which we'll talk about in a minute. This is in fact an adaptation and a good adaptation to do. It is an excellent idea to translate components of your intervention, all of the intervention into different languages. The reason you're doing this adaptation is often to enhance the reach of what it is you're doing. It is sort of an adaptation with the goal of enhancing reach. For all those people that wrote reach, I definitely see that link.

I want to note with quality of delivery, quality of delivery is the way in which someone is able to actually present the information. The act of translating is doesn't tell us anything about the quality of delivery. It tells us whether or not it was translated, kind of the implementing enthusiasm and the clarity and able to Artic lace things, those are the components that make up the quality of delivery.

Example number 2, participants signed on to the webinars, but they tuned out and didn't pay attention. This is an example of dosage, reach, quality of delivery, participant responsiveness or quality and adaptation.

Wonderful. We're seeing lots and lots and lots of people talking about participant responsiveness. That's by far the most common response. I would say that's definitely the place I would map this one to.

There was a bunch of people who also commented on quality of delivery. I really like the comment there, responsiveness and potentially related to quality of delivery, if the presenter is not effective. That may be the case and we don't necessarily know. That's probably something we want to check into if people are not paying attention. We want to know what is the quality of delivery in this situation.

The next example, the training was designed for physicians but delivered to the nurses and Allied health professionals. Is this a dosage, reach, quality of delivery, participant responsiveness, fidelity/adaptation?

Wonderful. Lots of people would say ‑‑ this is an excellence response here. Pretty much everyone captured this has to do with reach. You know we're changing the target audience, that's effecting the reach of the intervention, which essentially could also be considered an adaptation because we adapted who we're delivering the information to. A lot of people say reach and a lot of people then added adaptation on that as well. Amazing job on that one.

Members of the implementation team only attended 3 of 6 learning sessions. Is this an example of dosage, reach, quality of delivery, participant responsiveness, fidelity/adaptation?

Lots and lots of dosage right up front. If more diverse responses are participant responsiveness. This is a question of dosage and potentially participant responsiveness, both of those map perfectly.

Dosage, because we're only getting 3 of the 6. That's having to do with how much.

Participant responsiveness, that includes this attendance component. This is a matter of attendance related to that. Dosage and participant responsiveness.

One of the long‑term care homes didn't like the way the program presented harms and benefits, so they removed that section. Is this an example of dosage, reach, quality of delivery, participant responsiveness, or adaptation/fidelity?

Wonderful. Everybody here sees this as an adaptation/fidelity issue. This is a really common situation that we have seen. People go to implement an intervention and they don't like certain components of the intervention and they just remove those components. In a moment I'll talk about some pros and cons of what happens when we remove sections of an intervention. This is a great example of fidelity/adaptation.

The topic was interesting, but the presentation was very boring? Is it an example of dosage, reach, quality of delivery, participant responsiveness or fidelity/adaptation?

Wonderful. Lots and lots of people saw this as quality of delivery. We definitely see this as a classic example of quality of delivery. The presentation is boring because the person is not very good presenter, even if the topic is actually interesting to people. That's an issue of quality of delivery.

Our very final one slide, number 7, our last activity today, it is originally reminders were supposed to be updated every three months, but the implementation team decided that was too much work and they did it annually. Is this an example of dosage, reach, quality of delivery, participant responsiveness or fidelity/adaptation?

Amazing. A shout out to people like Emma and Ashley C. that saw this is potentially both an issue of fidelity/adaptation which almost everybody got that, and with fidelity/adaptation, it is potentially related to dosage because of how much of the intervention they were delivering. In this case, reminders. I use this example because I think it is a great example to illustrate another very, very common adaptation we see. Reminders are pretty common implementation strategy that's used regularly, and people often don't like updating reminders because it is a lot of work, but the research shows that reminders are effective when they are changed regularly so if a reminder stays stagnant and is only updated annually, essentially it fades into the background and is no longer something that you even notice, which means that even reminders are effective, reminders that don't change for an entire year are, in fact, not very effective at changing behavior. So, it is such a great example of an adaptation, but it is not a good adaptation for us to be making because it really effects the effectiveness of that intervention.

I want to say a huge, huge thank you for the participant responsiveness, you had excellent participant responsiveness in this activity. I wasn't sure how it would go. I want to say a major thank you to everybody in the chat box.

Now the chat box will return to being regular questions. Please ask any questions as I go through, and I'll take questions.

I want to dig a little bit deeper into what we know about fidelity and adaptation, this is a very hot topic, a very contention debate that is going on, kind of right now. As I mentioned before, fidelity is often related to kind of are people doing it the way it was supposed to be delivered, I think delivering it the way it is supposed to be. Adaptation is seen as changes to whatever they are not delivering.

I want to share my own personal history with fidelity and adaptation because it kind of has led me to be very passionate about understanding what is happening in this space.

As I mentioned at the beginning, I'm Canadian. I did my Ph.D. at Penn State. While I was there, I worked at a center that was supporting the implementation of evidence‑based programs across the state. People at the time were talking heavily about the importance of fidelity and how we needed fidelity to an intervention of all costs. It was really the language, the message that we were getting over and over and over again from every aspect. Then I returned to Canada, and essentially the message I was getting in Canada was very, very different. It said we need to adapt things. We need to adapt things to the local context, we need to adapt to different populations, and pretty much if you don't adapt, we're not even going to let you walk into the room and have a conversation about implementation with us.

As someone trained as a researcher, I really, really struggled with this. What was even crazier to me, all their positions were backed by data.

In the United States people had all these studies that showed that better fidelity led to better outcomes. This is not real data. Essentially, they had curves that showed this over and over again that better fidelity led to better outcomes, and therefore we needed fidelity to the intervention.

In Canada, we had a different situation where people kept citing this Baker systematic review that showed that people who had a higher level of what they called tailoring, essentially more adaptations, had better outcomes than people who had less adaptations. Honestly, for a couple of years, I really struggled to reconcile all of this information, how could we have one situation where people are saying better fidelity gives you better outcomes and other people saying well, more adaptations give you better outcomes. How could both of these be true? As a good researcher, I ever went and dug deep into the data.

I went and looked at the confidence intervals in the Baker Systematic Review. That's when I discovered something so interesting. Essentially it showed that if you have a lot of adaptations there was, in fact, the potential to have much better outcomes, where that line goes up toward the 4. This intervention, it could be even more effective if you make adaptations. There is also a risk. It can drop below and make it that the intervention is no longer effective at all.

Meanwhile, if you make very few adaptations, you're pretty much going to get the same results that they got the first time. This is so, so interesting. It really helped reconcile this idea that better fidelity leads to better outcomes but adaptations are not inherently bad, and they're not inherently good, we need to understand more about the adaptations, understand whether or not they'll potentially have a positive or negative impact on the outcomes. That's when I'm going to introduce now a bunch of brand‑new pieces of literature, frameworks out there that really helps us to think about adaptations in a different way so that you can go, if you want to think about adaptations and dig even further.

The first one, Stirman and Colleagues that wrote pioneering work on adaptations back in 2003, just came out with a brand‑new framework, called FRAME, an expanded framework talking about reporting adaptations. So it is less about how to proactively plan for adaptations, about you more about saying what was the process you used to make the adaptations and what was the reason you had for making those adaptations? So essentially, they help you think about things like what is it that's being adapted? Are you adapting the context in which something is being implemented? Are you adapting the content that's being implemented? Are you adapting the people that you were targeting?

There were questions like when are these adaptations made? Are you making adaptations proactively? Before you start implementing? Reactively? After you start implementing? In fact, there is some research that shows if you are proactive about your adaptations, there is a better chance that those adaptations are pretty much a good thing to do. That's not always true, but it is more likely, and that the reactive adaptations, they're more likely to be potentially detrimental.

I want to note that all proactive adaptations are not good things to do, and all reactive adaptations are not bad things to do. You are never going to be able to prevent all reactive adaptations because the reality is that we need to adapt when we're actually implementing things. This helps us to think about what kind of adaptations they were and when they were made.

We can also think about things like why an adaptation is made. Is it made to adapt to a new context? Is it made because of people's underlying, philosophical beliefs?

Great examples I have seen related to this, it is we have done work in low, middle income countries and we were in a situation where they were using a drug that was supposed to be for women that experienced post‑partum hemorrhage and women were bleeding out after essentially delivering a baby. The drug can also be used for abortions. So there were certain countries that did not want to introduce this drug and literally did not have access to the drug in the entire country because of underlying philosophical beliefs that they had so we had to adapt based on this philosophical perspective because they would not allow the drug which was kind of consider what they call first‑line therapy, the best thing to do in this situation.

There were lots of other situations, in fact, much more common that we adapt because of the setting in which we're implementing. Maybe if the population is a little bit different. Maybe the kind of organization, it is a little bit different. Maybe the country is different. We need to make adaptations for those reasons. Understanding why we're making them can really help us as well.

That was really telling us about how do you understand adaptations when they happen? We also want to think about do you really want to be making this adaptation. Is that, in fact, a good idea? So, this is a framework that has been developed by Alexis Kirk and colleagues in North Carolina that I had the privilege to helping with. They're really asking questions to help set people up to figure out whether they should move forward with an adaptation or potentially abandon or redesign the adaptation in a different way.

They have a whole process of asking a bunch of questions, for example, is this adaptation systematic and is it designed to really move forward and figure out how we can implement this intervention better. If the answer is yes, then we ask more questions. If the answer is no, we don't relieve systematic adaptation and we may want to discuss the pros and cons with the stakeholders before we move forward.

If it is done systematically, we can start asking other questions like is there going to be a negative impact on outcomes if we make this adaptation? If the answer is no, it was done systematically, there is no negative impact, that's probably a good adaptation to move forward with. If it is going to have a negative impact on outcomes, we start asking questions like whether or not there is a way to mitigate that impact by doing some on the part strategies. If we're able to do that, let's move forward, if not, let's discuss pros and cons. By taking a framework like this, we address the reality that adaptations are inevitable. There are always going to be adaptations in implementation work. You will never lose that. Let's be more thoughtful about them before we start implementing.

It helps us to really think about the impact of the adaptations. It helps us to think about whether or not there are changes to things like the core components of an intervention. In fact, related to cutting‑edge things, since even developing the slides, there is a great conversation happening at the Society for Implementation Research Collaboration or the SIRC Conference in Seattle last month. People talked about abandoning the idea of core components in exchange for core functions. Really asking whether or not adaptation taps into the function we are trying to address. Is this tapping into or changing the function of an implementation strategy? Historically we call them core components and there is a shift talking about functions that really gets back to this mechanism of change. Because this idea of something is a core component or not is challenging to understand. I like to use a house analogy.

Essentially, if you think of your intervention as being a house, what we're saying is that if you make changes to what we call the surface structure, that's a good thing to do. For example, if you want to repaint your house, if you want to change the doors, if you want to put in new cabinets, those are excellent, excellent adaptations. They're going to make your house look the way you want your house to look so that it will be more inviting, you get more people to show up, more people to stick around. You do not want to be going in and bashing down walls and breaking down walls if you don't know whether or not those walls are holding up the structure of the house. We want to be leaving the house structurally intact, making it look the way that we want it to look so that it is more inviting to people. We want to be doing the same thing with our interventions. We want to be changing the things that kind of are the outside paint, but we do not want to be changing those core components or the structural walls inside of our intervention.

So, there is another great resource that I wanted to share that I really, really like the idea of, it has to do with balancing fidelity and adaptations. This one comes from the cancer control group at the National Cancer Institute in the U.S. They talk about how we can think about adaptations based on whether they should be a green light, so go ahead. All of those repainting adaptations, they're green light adaptations, go ahead, repaint the walls. There is red light adaptations, where we have definitely torn down structural components and we should not move forward with those. There is yellow light adaptations, so ones that probably land somewhere in between. By thinking about these, thinking about them proactively, we can set ourselves up for a greater likelihood of success.

Those are some of the key things I wanted to say about adaptations, and I wanted to share some big resources on adaptations. I do want to note, I know people have asked about the slides, all of these slides are available, you can go and look for the different resources on your own. I wanted to end by talking really quickly about sustainability, how to plan for sustainability in sharing a couple of sustainability resources with you as well.

So why do we need to sustain interventions? We know that we put a massive amount of time and resources into implementing interventions. Those interventions are rarely sustained. Essentially, we're wasting time and money when we do not sustain what it is we're implementing. I also think there is a huge risk that if we walk into an organization or community and we implement something, and it is not sustained the likelihood they're going to invite us back decreases.

When we think about sustainability, one of the things that's really important, it is to recognize and go back to really, really understanding what it is you're implementing so that you can use that to guide how you think about and talk about sustainability. Remember early on there are ‑‑ I talked about how we of the what, what it is you wants people to do differently, and how, the strategies we use to change people's behavior. We need to think about both these components when we think about sustainability. In fact, these are two of the four components that we can think about when we define what we're going to sustain.

When you think about sustainability, you can really think about sustainability for the four different aspects of your intervention. Essentially, are you sustaining the evidence‑based practice, the what. Are you sustaining so that people continue to change their behavior in the way that you want them to change their behavior? You can think about sustainability related to the strategies you are using so the reminders, education, using champions, communities of practice, how are you going to sustain the use of those strategies? You can think about how you're going to sustain outcomes, and especially measuring those outcomes because we done a good job of measuring during the implementation phase so that we know whether or not we're achieving outcomes we want. During sustainability, we stop measuring the outcomes. We often stop icing implementation strategies but hope and expect that people will continue to change their behavior.

We also need to recognize that sustainability is dynamic. There is great papers talking about the dynamic nature about sustainability. How we need to consider the facts that there will be adaptations happening at all three levels over time? The what that you want people to do differently, it is probably going to change through time. The strategies you use are definitely going to change over time, and how you measure your outcomes is going to change over time. Our whole conversation about adaptations is closely, closely linked with sustainability because we can think about what is it that we're sustaining, what kinds of adaptations are we going to need to make during sustainability phase. With that, it helps us to come up with a sustainability plan. When developing a sustainability plan, you can think about five key things. First, defining what it is that you are sustaining. This is very, very commonly a skipped step and it is so essential for setting you up for sustainability success.

Second, you can decide who needs to be involved with sustainability third, understand the context for sustainability. Where is it that you're implementing this? Fourth, you can think about what strategies you're going to use in the sustainability phase. The how. Finally, coming up with an ongoing monitoring plan for the evaluation. Five key things to think about.

With that, we can think about the different sustainability tools that you might want to use to plan for and assess sustainability. To my knowledge, there are three great sustainability tools out there that are commonly used in KT. The sustainability assessment tool that works well with an evidence‑based prom particularly implemented in a community setting. The NHS sustainability model working well in healthcare if you want quantitative data and the long‑term success tool which works really well in healthcare as well as other settings and has more of a qualitative conversational feel to it but tracking data over time. If you're looking for a sustainability tool, I highly recommend going through these three things. That's my very, very quick high‑level overview of some of the cutting-edge stuff we know about in adaptations and sustainability.

I wanted to end with a couple of quick things: The fist, if you want to know more about any of these topics, we currently have a free mini course that's available until November 11 so that is closing down. We have 2900 people that want to learn about the basics of implementation science, and you're welcome to sign up, join that. Today, this morning, we launched our first full course designing for implementation that delves even deeper into all of these topics.

You can check us out on all of these things. We have just joined Twitter, I'm very excited to connect with lots of people there. We have all of you are o other information there as well. With that, I believe that we're going to open it up for questions.

>> DONNA MITRANI: Thank you. That's a fantastic presentation. We'll open it up for questions, but fist I wanted to introduce our reactors. Our first reap actor today, Rosmin Esmail, a Ph.D. candidate in the Department of Community Health Sciences at the University of Calgary. Her Ph.D. thesis is focused on understanding the relationship between Knowledge Translation and health technology reassessment. In addition to her Ph.D. studies, Rosmin is an adjunct lecturer with the Department of Oncology, Faculty of Medicine, University of Calgary, and she works as a prevention trauma epidemiologist with Alberta Health Services and brings a broad‑base of experiences and interests in healthcare to her role with an application of evidence‑based research and Knowledge Translation to clinical practice.

Next on our list of reactors, we have Dr. Mary Goldberg from the University of Pittsburgh, Human Engineering Research Laboratories and Department of Rehabilitation Science and Technology. In these roles, she focuses on developing and testing evidence‑based continuing education interventions for rehabilitation professionals. She teaches four courses at the University of Pittsburgh on disability, rehabilitation and assistive technology topics. Dr. Goldberg also serves as codirector in the NIDILRR initiative to mobilize partnerships for Successful Assistive Technology Translation Center and International Society for Wheelchair Professionals. Dr. Goldberg develops unique educational interventions to increase capacity of researchers worldwide to translate assistive technology products.

Last but not least, Dr. Meg Ann Traci, life span development. Her research has been committed to improving the health of Persons with Disabilities. She is currently a research associate profession at RTC Rural, the Rural Institute for Inclusive Communities at the University of Montana.

Welcome to the reactors. If you can turn on the webcams, we can get started. I would like to thank everybody for participating in the chat and asking great questions. I encourage you to do so as we move through this conversation. Our first question is from a pediatrician and research professor at the University of Auckland, New Zealand. The question is, is there a reference to the Brown paper just referred to? That's to you, Julia, that's referring to the Brown paper on Slide 9 of the presentation?

>> JULIA MOORE: Yes. I will ‑‑ the moment this presentation finishes, I will add it to the chat box and send it out, that paper.

>> DONNA MITRANI: The next question, it is from Heidi, she's a KT specialist from Wisconsin. This one is also for you, Julia. If dissemination is 1 to 2% in terms of uptake, what percentage is implementation?

>> JULIA MOORE: I should have added that often I like to ask people. Unfortunately, it is about 7 to 10%, change in outcomes. It doesn't mean change in behavior but change in outcomes is 7 to 10%.

>> DONNA MITRANI: Great. Our next question I'll direct to Meg Ann Traci. What are some common barriers to sustainability that you have encountered and how have you responded to the barriers?

>> MEG ANN TRACI: I would say a lot of our work that's focused on improving health with People with Disabilities, it is bridging the shared outcomes from your non‑traditional public health partners, centers for independent living, development disability service providers, to the outcomes of your more traditional partners. That takes time. I would say that creating that inner disciplinary team that understands one another's assets, inputs to the evidence‑based program, how it is implemented, it is something that we have to really pay attention to in building sustainable programs that really are consumer driven, are constantly following the processes that assure that the responsivity is there, that the quality is there, that fidelity is there, all of that happens on site within some of the non‑traditional partner facilities, somewhere in the community, but led by the partners, and they need to meet some of the fidelity criteria of more traditional public health and healthcare providers. It does take time to bring those two together. I would say the other part, it is really underscoring the importance of self‑determination and choice in terms of helping that traditional public health, healthcare partner understand that that is the driving value of the disability community, and that it is not necessarily a threat to fidelity, but it is ‑‑ it should strengthen the commitment of the disability community, the reach, and the responsivity to the intervention if we really do protect in that way.

>> DONNA MITRANI: Thank you so much. This next question actually comes from our Center’s product Director, Dr. Kathleen Murphy and asks ‑ this‑ is for you, Julia ‑‑ has anyone set up the implementation in the theory of change, how some are contingent upon others, i.e. engagement of quality of adaptation?

>> JULIA MOORE: Not directly to ‑ no.‑ At this moment in time, no. I would say that Shannon's new paper starts to do some of those pieces, but it does not set it up in at model Alexis Kirk's work starts to push that and the two are talking about collaborating to even move some of that agenda forward. I think we're going to that place. I also think that there is a new grant that's been looking at mechanisms of change and that hopefully will start to push that forward as well. As of today, right now, I do not know of anything that's mapped out those different components. A small plug, that the Durlack and Dupre paper to describe the six components that originally has eight, it's an underutilized way to think about these things. If you want to think about adaptations, I would highly recommend reading Page 329. It is an intense paper, but Page 329, it is kind of a golden nugget in that.

>> DONNA MITRANI: Thank you. Julia, would you mind in the chat box spelling out some of those names and resources?

>> JULIA MOORE: Yeah. Yes.

>> DONNA MITRANI: Thank you. I'll turn the conversation over to Dr. Goldberg, what advice do you have for someone struggling to generate participant responsiveness? What strategies have you used in your work to generate participant responsiveness?

>> MARY GOLDBERG: This is one of the notes I had after reviewing Julia's slides or Dr. Moore's slides initially. It reminds me a lot of strategies I have learned to implement related to online learning and how that has helped me be a better instructor in the live classroom as well. So, making sure that participants feel some ownership and connection to the community is huge. We have learned that if a learner is disengaged because they don't feel that they're a part of the community, their long‑term learning outcomes will be lower, and so one of the engagement strategies that we have used is to have participants introduce themselves at the beginning and connect on a personal level with both the instructor and other learners and to continuously engage with the participants so that they don't feel like they're floating out there in cyberspace. I have started to do a lot of connecting in my in‑person classes as well at the beginning of each session to make sure that participants are not only engaged with the content, but also engaged with the other learners to make sure that we keep that sense of community consistent.

>> DONNA MITRANI: Thank you so much. This next question, it is actually coming from a reactor, from Rosmin, this is for you, Julia. I apologize. Here we are. She asks sometimes we may not know that adaptations lead to a negative outcome or untended consequences until we try them. How do you deal with that?

>> JULIA MOORE: Yes. I think that's the reality. We rarely now -- and in fact, I think we're trying to be proactive, but the reality is a lot of these things we only really know after the fact. So I would say that the most important thing is one, having early conversations about what the adaptations are, having repeated conversations over time and then actually tracking that data, because I get parachuted into projects when people have not been successful very, very, very often. Essentially, they have no understanding of what they actually implemented and what that implementation quality is. If you don't have any data tall to tell people how well something was or wasn't implemented, we have no idea why it didn't work.

I think that the key is collecting data along that pathway so that you can always go back afterwards, particularly if you're planning to spread and scale something.

>> DONNA MITRANI: Thank you so much. Another question for you, Julia, this one comes from Matthew Hill, a master's of public health student from Michigan University and a Cochrane systematic review author and KT specialist that asks if you done any work with Cochrane Knowledge Translation.

>> JULIA MOORE: I have not.

>> DONNA MITRANI: Thank you.

The next question, I'll turn it over to Rosmin Esmail, Julie covered fidelity and adaptations to content as a component of implementation quality, in your work, how do you balance the needs to tailor KT strategies to a context in the need to be faithful to the core components of the strategies?

>> ROSMIN ESMAIL: A great question. A quite complicated up with to answer in the next few minutes. I think one of the things I mentioned in the chat, it was around the checklist, I don't know if people know about it, it stands for template for intervention description and replication. It is a checklist that is available that really helps you kind of describe your intervention in detail. Julia talked about this as really explicit in what you're doing, how you're doing it, where you're doing it and that's what this goes into. Some of those details. I think it is part and parcel of trying to implement interventions within a clinical setting, it is really, really important to be explicit around what you're doing, how you're adapting it, how to collect the data so that you can go back and see what did we do? What did we learn? Rather than being a black box as mentioned in the chat box. I don't know if Julia wants to comment more on that.

>> JULIA MOORE: I completely agree with everything you just said there, Rosmin.

>> DONNA MITRANI: Thank you.

Actually, that's a very good segue, another question, what is the black box for unpacking, Julia, if you could address that a little bit more?

>> JULIA MOORE: A great question. I think that‑ so, first I should say that the reality is we're probably unpacking a lot of the different black boxes at the same time. That's because typically we're implementing things, so it is pretty common that we're implementing something where the what is not actually crystal clear. We may have to unpack the black box to understand what it is we truly want people to do differently. Particularly in situations when we have broad concepts. So, you know, when people talk about ‑patientcentered‑ care, that's a very broad concept. That what, it is essentially a big black box that needs to be unpacked.

We can also unpack the black box of the implement takings strategies, what they are, whether there is evidence for them, whether they are linked back to the underlying what using behavior change theory. And we can unpack a black box of what did people actually deliver, so what is the implementation quality of the two different components when moving forward with doing it. I think there are probably several different black boxes that we're really unpacking. Typically, we implement things and kind of hope that they work and have a bit of evidence for components of them. We don't totally now. Yeah.

>> MEG ANN TRACI: Can you expand on the who? I think of the blacks, black box as the Organism and what it brings to that response system?

>> JULIA MOORE: Yeah. Yeah. Do you mean who in terms of who it is ‑‑ we want to change?

>> MEG ANN TRACI: The individual and the range of individuals brings to the range of evidence based.

>> JULIA MOORE: Absolutely. We know that we're often asking ‑‑ even for organization or community‑level interventions, we need individual people to actually change their behavior, and those individual people are different from each other and how they're going to interact with the intervention is going to vary. I spend a lot of time thinking about and working on things like motivation. People have different drivers of motivation, how that effects hop successful an intervention is going to be, there are a lot of different factors that interact in that space. A great comment, Meg.

>> DONNA MITRANI: Thank you so much.

This question comes from Susan Lynn, an occupational therapy professor, I have seen studies where they adapted the intervention and expected outcomes to be less effective, but they were effective. What are your thoughts on this, Julia? Could be that adaptation didn't alter a core function of the intervention?

>> JULIA MOORE: Yes. I would say two things. Great question, great job noticing that. That definitely is happening.

I would say that what it means, it is not changing a core function. I think there is also a situation where adaptations help embed things on organizational structures that actually set them up to integrate that work even better than the way people are already functioning and setting it up for better sustainability. A great example, I was working on a project years ago looking at mobilization and older adults and hospitals and they embedded that with a provincial strategy that was about senior family community. Embedding these components together, they made some adaptations, but they ultimately strengthened the intervention making it part of this larger poll that had huge policy higher level questions. I think that's a perfect example of why adaptations are not good or bad, we have to understand what the adaptations are.

>> DONNA MITRANI: We have a few more minutes. Maybe time for one or two more questions. I will pose another question to Mary Goldberg, what recommendations do you have to improve the quality of delivery, and how have you adapted the method of delivery to best fit your target audience’s needs?

>> MARY GOLDBERG: This is a great question.

We do a lot of work in resource centers also. I'm thinking specifically on some of the training we do for wheelchair service providers in Latin America. We have developed some full online courses, but we have modeled those after a standard training package that's been produced by the World Health Organization for inperson delivery and we have found through a variety of pilot and feasibility studies that a hybrid approach works best and we developed some instructional manuals and components to work with our implementing partners to make sure that they're not changing any of those core structural components to make sure that these training panning packages are implemented as originally designed, that they still have that high fidelity, but the early conversations with our stakeholders are completely critical to making sure that that goes off without a hitch and sort of the nothing about us without us philosophy of making sure that they're engaged from the getgo and that's really helped with that alongside the instructional manual component that's really helped with the quality of delivery. Still allowing us to make adaptations. Thank you for the question and allowing me to participate.

>> DONNA MITRANI: A final question to close out the session, this last question, it is for you, be Julia. This question comes from Heidi Decker Maur asking if implementation strategy quality similar to fidelity?

>> JULIA MOORE: I would say implementation quality is a broader construct and that fidelity is a component of the larger implementation quality. They're kind of related to each other, one is a bigger piece or a smaller piece to this bigger idea.

>> DONNA MITRANI: Thank you so much. Again, thank you to Dr. Moore for a fantastic presentation and the reactors for participating in the discussion.

>> JULIA MOORE: Thank you so much, everyone!